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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,840	09/05/2003	William A. Moffatt	1008-US	8406

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MICHAEL A. GUTH
2-2905 EAST CLIFF DR.
SANTA CRUZ, CA 95062

EXAMINER	
STOUFFER, KELLY M	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
02/13/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/656,840	MOFFATT ET AL.	
	Examiner	Art Unit	
	KELLY STOUFFER	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-23,25-41 and 43-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-23,25-41 and 43-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Due to amendments, the rejections of the previous office action have been withdrawn. Upon an updated search, new grounds of rejection appear below; hence, this action is non-final.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20-23, 25-41, 43-44, and 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer (US 5252134) in view Pike (US 6240874).

As to claims 20 and 40, Stauffer teaches a method of coating substrates comprising inserting a substrate into a process chamber (column 3 lines 24-30), supplying a first liquid silane to a heated vaporization chamber, vaporizing the first liquid silane (columns 3 and 4 lines 57-2), and reacting the vapor with the substrate to create a layer (the method of Stauffer is chemical vapor deposition, hence by definition the precursor reacts with the substrate surface. Stauffer does not explicitly teach using a dehydration technique before coating with HMDS and the like (column 6 lines 64-67). Pike teaches a dehydrating step before silane deposition in order to remove fluids from the wafer before coating and to improve coating adhesion (column 1 lines 41-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Stauffer to include a dehydration step as taught in Pike in order to remove fluids from the wafer before coating and to improve coating adhesion.

As to claims 21-23 and 46-47, the liquid silane is withdrawn from a reservoir in column 3 lines 24-30 in a specific amount. Using a manufacturer's source bottle for the chemical (which is inherent that that would be how the chemical was obtained) would

also work in the same manner, as a measured amount of the chemical obtained from the manufacturer would be measured directly into the system or into a reservoir.

As to claims 25-30, the dehydrating process in Pike uses heated nitrogen gas in column 1 lines 40-58. Further, vacuum is used so the evacuation would be from before the dehydration process and ongoing after the dehydration process. It is noted that in these claims only a first and second pressure is required, not that the two pressures are different.

As to claim 31, whether the second pressure would be lower than the first pressure would depend upon what conditions are required for the deposition of the film after the dehydration process is complete. Hence, the relative pressures are result effective variables modified by routine experimentation. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 32, it would be impossible to supply a liquid silane without some sort of liquid impurity, such as water or a solvent, with it, and hence have it supplied to the vaporization chamber and vaporized as well.

As to claims 33-39, the first silane is vaporized in a vaporization chamber using heat and reduced pressure in Stauffer column 3 et seq. As was stated in reference to claim 32, any impurity or solvent will also be vaporized relatively simultaneously in the first vaporization chamber.

As to claim 41, the substrate may comprise glass in Stauffer column 7 lines 18-29.

As to claims 43-44, the variety of silanes claimed is taught by Stauffer in columns 6-7 lines 64-5.

As to claims 48-49, the liquid source is pressurized by nitrogen gas in Stauffer column 3 lines 43-50.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer and Pike as applied to claims above, and further in view of the applicant's admitted prior art.

Stauffer and Pike teach that the process above is pertinent for reactants with low volatility, but is silent to using mercapto silanes. However, the applicant admits that it is well known in the art to deposit amino, mercapto, or epoxy silanes to glass substrates and that the reactants have low volatility (paragraph 10). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the reactants is substrates claimed by the applicant in the process taught by Stauffer and Pike as they are similar to the reactants used by Stauffer in columns 6-7 lines 64-5 that also have low volatility.

Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer and Pike as applied to claims above, and further in view of Uhlenbrock et al. (US 6,214,729 B1).

Stauffer and Pike teach the limitations above, but are silent to using a syringe pump. However, Uhlenbrock teaches the art recognized suitability of using a syringe

pump to pick up the liquid feed and deliver it to a vaporizer (figure 1; example 1). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a syringe pump in the process taught by Stauffer and Pike. By doing so, one would have a reasonable expectation of success, as Stauffer teaches delivering a liquid to a vaporizer and Uhlenbrock teaches the art recognized suitability of using a syringe pump to do so.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Seppala et al. (US 5665639) and Fulford, Jr. et al. (US 5943550) teach similar dehydration steps.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY STOUFFER whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1792

kms

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792